

FIG. 1

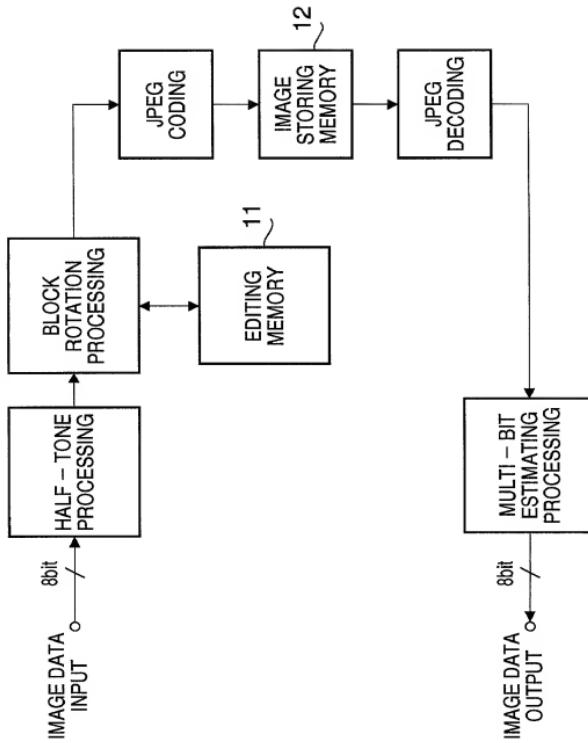
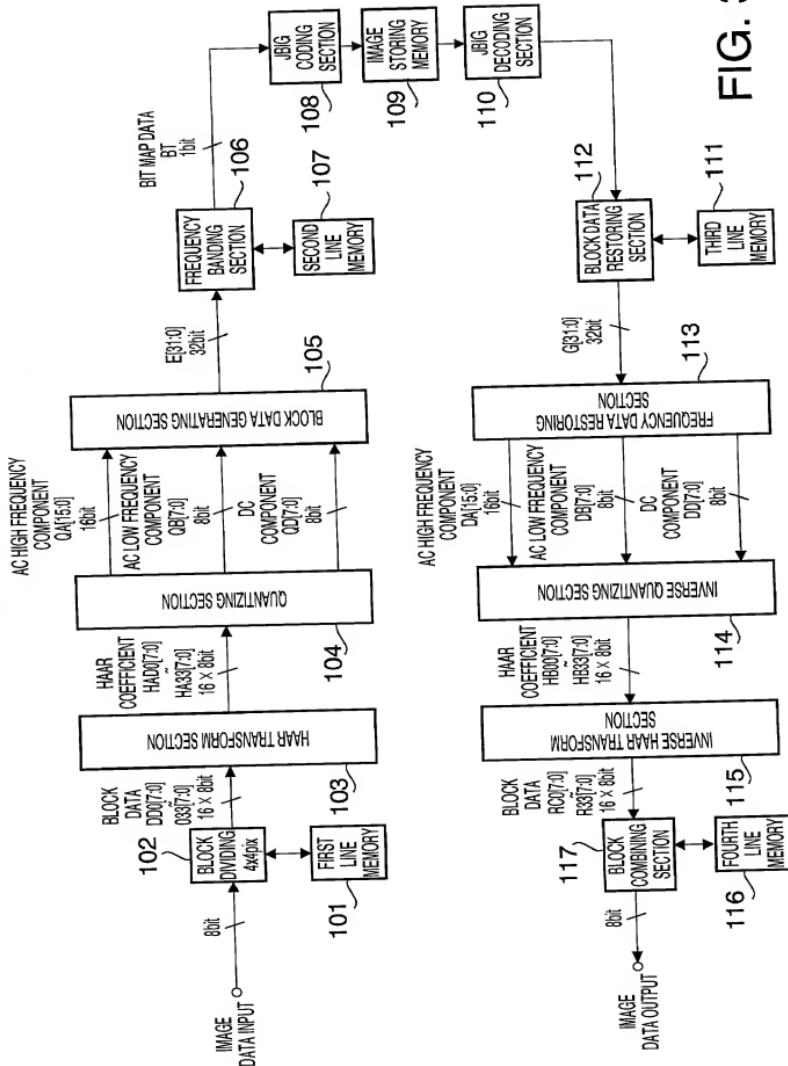


FIG. 2



PRIMARY PATTERN(P_{mny})
(MN ARE OMITTED IN THE FIGURE)

m = 0			m = 1			m = 2			m = 3		
P00 P01 P02	P03 P04 P05	P01 P02 P03	P00 P01 P02	P03 P04 P05	P01 P02 P03	P02 P03 P04	P01 P02 P03	P02 P03 P04	P01 P02 P03	P02 P03 P04	P01 P02 P03
P10 P11 P12	P13 P14 P15	P12 P13 P14	P10 P11 P12	P13 P14 P15	P12 P13 P14						
P20 P21 P22	P23 P24 P25	P21 P22 P23	P20 P21 P22	P23 P24 P25	P21 P22 P23	P22 P23 P24	P21 P22 P23	P22 P23 P24	P21 P22 P23	P22 P23 P24	P21 P22 P23
P30 P31 P32	P33 P34 P35	P32 P33 P34	P30 P31 P32	P33 P34 P35	P32 P33 P34						
P00 P01 P02	P03 P04 P05	P01 P02 P03	P00 P01 P02	P03 P04 P05	P01 P02 P03	P02 P03 P04	P01 P02 P03	P02 P03 P04	P01 P02 P03	P02 P03 P04	P01 P02 P03
P10 P11 P12	P13 P14 P15	P12 P13 P14	P10 P11 P12	P13 P14 P15	P12 P13 P14						
P20 P21 P22	P23 P24 P25	P21 P22 P23	P20 P21 P22	P23 P24 P25	P21 P22 P23	P22 P23 P24	P21 P22 P23	P22 P23 P24	P21 P22 P23	P22 P23 P24	P21 P22 P23
P30 P31 P32	P33 P34 P35	P32 P33 P34	P30 P31 P32	P33 P34 P35	P32 P33 P34						
P00 P01 P02	P03 P04 P05	P01 P02 P03	P00 P01 P02	P03 P04 P05	P01 P02 P03	P02 P03 P04	P01 P02 P03	P02 P03 P04	P01 P02 P03	P02 P03 P04	P01 P02 P03
P10 P11 P12	P13 P14 P15	P12 P13 P14	P10 P11 P12	P13 P14 P15	P12 P13 P14						
P20 P21 P22	P23 P24 P25	P21 P22 P23	P20 P21 P22	P23 P24 P25	P21 P22 P23	P22 P23 P24	P21 P22 P23	P22 P23 P24	P21 P22 P23	P22 P23 P24	P21 P22 P23
P30 P31 P32	P33 P34 P35	P32 P33 P34	P30 P31 P32	P33 P34 P35	P32 P33 P34						

 P_{mny} = 1

 P_{mny} = 0

FIG. 4

HA03 (AC600dpi COMPONENT)	HA13 (AC600dpi COMPONENT)	HA23 (AC600dpi COMPONENT)	HA33 (AC600dpi COMPONENT)
HA02 (AC600dpi COMPONENT)	HA12 (AC600dpi COMPONENT)	HA22 (AC600dpi COMPONENT)	HA32 (AC600dpi COMPONENT)
HA01 (AC300dpi COMPONENT)	HA11 (AC300dpi COMPONENT)	HA21 (AC600dpi COMPONENT)	HA31 (AC600dpi COMPONENT)
HA00 (DC COMPONENT)	HA10 (AC300dpi COMPONENT)	HA20 (AC600dpi COMPONENT)	HA30 (AC600dpi COMPONENT)

FIG. 5

HA03 (AC600dpi COMPONENT)	HA13 (AC600dpi COMPONENT)	HA23 (AC600dpi COMPONENT)	HA33 (AC600dpi COMPONENT)
HA02 (AC600dpi COMPONENT)	HA12 (AC600dpi COMPONENT)	HA22 (AC600dpi COMPONENT)	HA32 (AC600dpi COMPONENT)
HA01 (AC300dpi COMPONENT)	HA11 (AC300dpi COMPONENT)	HA21 (AC600dpi COMPONENT)	HA31 (AC600dpi COMPONENT)
HA00 (DC COMPONENT)	HA10 (AC300dpi COMPONENT)	HA20 (AC600dpi COMPONENT)	HA30 (AC600dpi COMPONENT)

TRANSFORM INTO DATA OF
PREDETERMINED NUMBER BITS WITH
EQUAL SLICE LEVELS DETERMINED BY
THE NUMBER OF QUANTIZED BITS

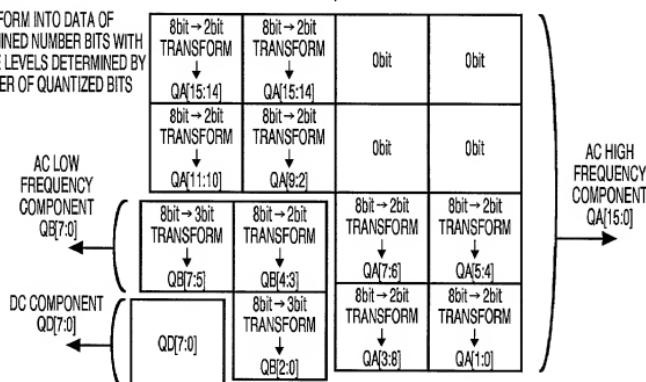
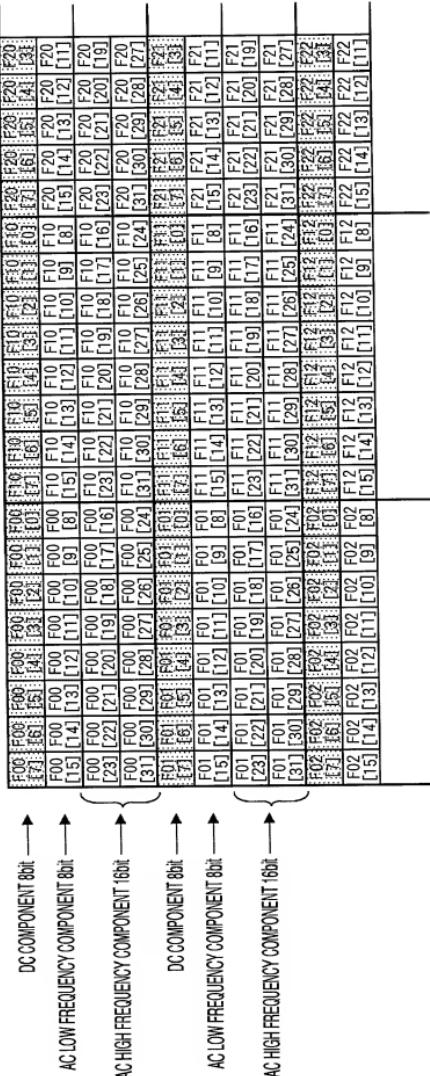
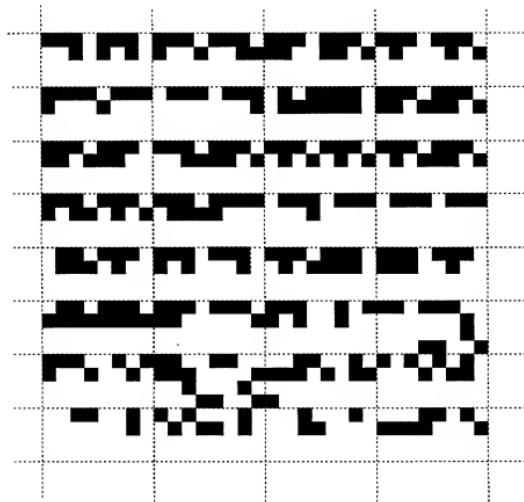


FIG. 6



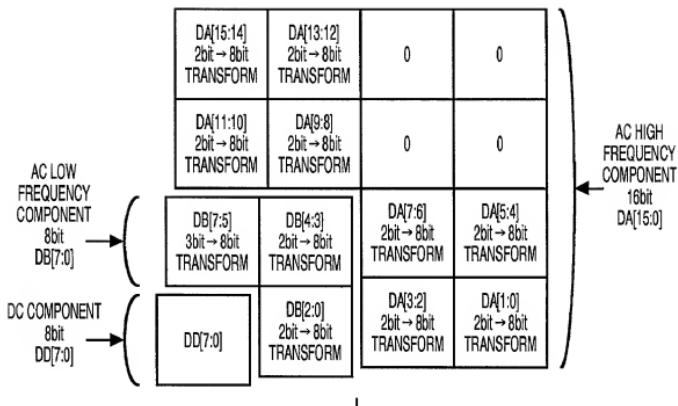
BIT MAP PATTERN ARRANGEMENT

FIG. 7



ACTUAL BIT MAP DATA SUBJECTED TO FREQUENCY BANDING

FIG. 8



HB03 (AC600dpi COMPONENT)	HB13 (AC600dpi COMPONENT)	HB23 (AC600dpi COMPONENT)	HB33 (AC600dpi COMPONENT)
HB02 (AC600dpi COMPONENT)	HB12 (AC600dpi COMPONENT)	HB22 (AC600dpi COMPONENT)	HB32 (AC600dpi COMPONENT)
HB01 (AC300dpi COMPONENT)	HB11 (AC300dpi COMPONENT)	HB21 (AC600dpi COMPONENT)	HB31 (AC600dpi COMPONENT)
HB00 (DC COMPONENT)	HB10 (AC300dpi COMPONENT)	HB20 (AC600dpi COMPONENT)	HB30 (AC600dpi COMPONENT)

INVERSE QUANTIZATION PROCESSING

FIG. 9

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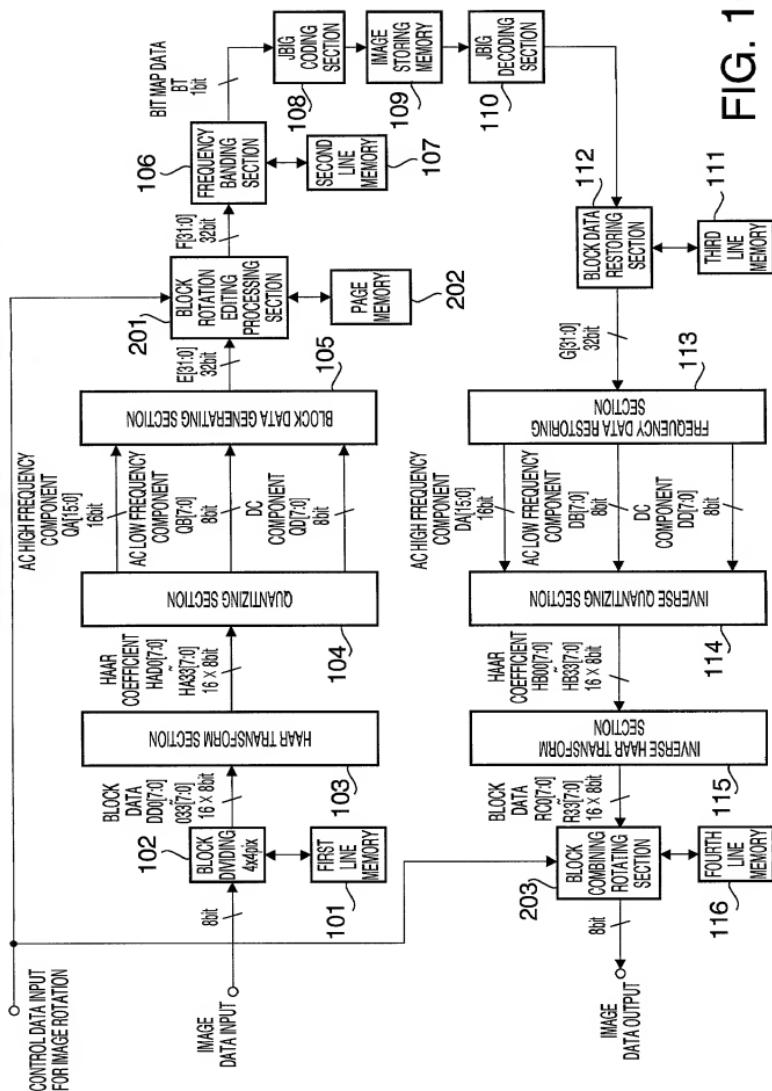


FIG. 10

PAGE MEMORY WRITE ORDER

E00	E10	E20	E30
F	F	F	F
E01	E11	E21	E31
F	F	F	F
E02	E12	E22	E32
F	F	F	F
E03	E13	E23	E33
F	F	F	F
E04	E14	E24	E34
F	F	F	F

PAGE MEMORY READ ORDER
 $F_{x,y}[31:0] = E_{3-y,x}[31:0]$

COUNTERCLOCKWISE
 90 ROTATION

E30	E31	E32	E33	E34
F	F	F	F	F
E20	E21	E22	E23	E24
F	F	F	F	F
E10	E11	E12	E13	E14
F	F	F	F	F
E00	E01	E02	E03	E04
F	F	F	F	F

NOTE) F IS INDICATIVE OF DIRECTION
 OF IMAGE IN BLOCK

BLOCK ROTATION EDITING PROCESSING

FIG. 11

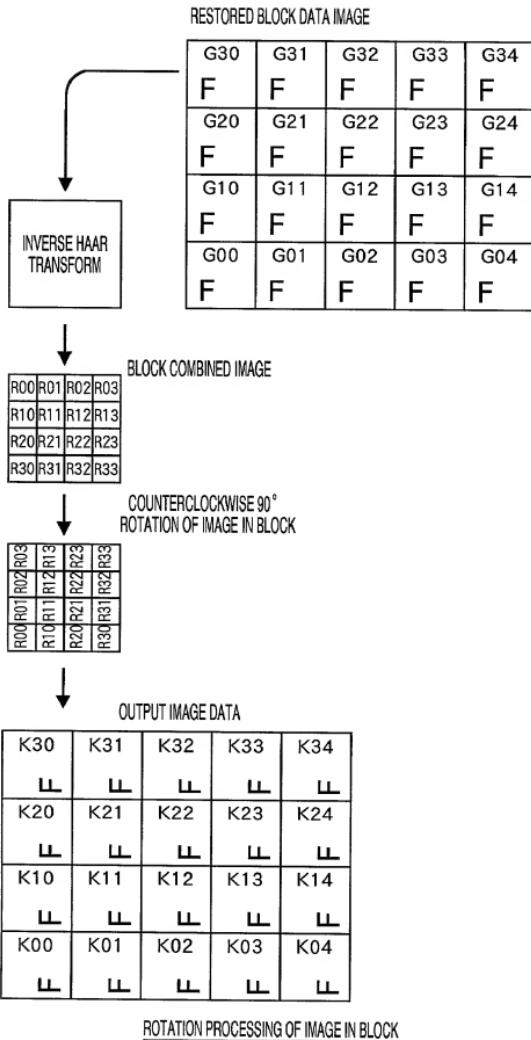


FIG. 12



The diagram illustrates the merging of two 4x4 matrices into a larger 8x8 matrix. The original matrices are:

Ea00	Ea10	Ea20	Ea30
F	F	F	F
Ea01	Ea11	Ea21	Ea31
F	F	F	F
Ea02	Ea12	Ea22	Ea32
F	F	F	F
Ea03	Ea13	Ea23	Ea33
F	F	F	F
Ea04	Ea14	Ea24	Ea34
F	F	F	F

Eb00	Eb10	Eb20	Eb30
F	F	F	F
Eb01	Eb11	Eb21	Eb31
F	F	F	F
Eb02	Eb12	Eb22	Eb32
F	F	F	F
Eb03	Eb13	Eb23	Eb33
F	F	F	F
Eb04	Eb14	Eb24	Eb34
F	F	F	F

The resulting 8x8 matrix is:

Ea00	Ea10	Ea20	Ea30	Eb00	Eb10	Eb20	Eb30
F	F	F	F	F	F	F	F
Ea01	Ea11	Ea21	Ea31	Eb01	Eb11	Eb21	Eb31
F	F	F	F	F	F	F	F
Ea02	Ea12	Ea22	Ea32	Eb02	Eb12	Eb22	Eb32
F	F	F	F	F	F	F	F
Ea03	Ea13	Ea23	Ea33	Eb03	Eb13	Eb23	Eb33
F	F	F	F	F	F	F	F
Ea04	Ea14	Ea24	Ea34	Eb04	Eb14	Eb24	Eb34
F	F	F	F	F	F	F	F

IMAGE COMBINING EDITING PROCESSING

FIG. 13

FIG. 14

CONTROL DATA INPUT FOR IMAGE ROTATION

AC HIGH FREQUENCY COMPONENT DATA[15:0]

AC LOW FREQUENCY COMPONENT QBF[7:0]

DC COMPONENT QDT[7:0]

HAIR COEFFICIENT HAD[7:0]

HAIR COEFFICIENT HBAD[7:0]

HAIR COEFFICIENT HB[337:0]

HAIR COEFFICIENT HB337[7:0]

HAIR COEFFICIENT HB337[16 x 8bit]

QUANTIZING SECTION

HAR TRANSFORM SECTION

BLOCK DIVIDING 4x4pix

FIRST LINE MEMORY

IMAGE DATA INPUT

IMAGE DATA OUTPUT

BLOCK DATA RCG[7:0]

BLOCK DATA RCG[337:0]

BLOCK DATA RCG[337:0] 16 x 8bit

BLOCK COMBINING ROTATING SECTION

INVERSE HAR TRANSFORM SECTION

INVERSE QUANTIZING SECTION

FREQUENCY DATA RESTORING SECTION

AC HIGH FREQUENCY COMPONENT DATA[15:0]

AC LOW FREQUENCY COMPONENT DBF[7:0]

DC COMPONENT DDF[7:0]

HAIR COEFFICIENT HBD[7:0]

HAIR COEFFICIENT HB337[7:0]

HAIR COEFFICIENT HB337[16 x 8bit]

INVERSE HARMONIC TRANSFORM SECTION

ROTATION INFORMATION HEADER ADDING SECTION

ROTATION INFORMATION HEADER DETECTING SECTION

IMAGE CODING SECTION

IMAGE STORING MEMORY

JBIG DECODING SECTION

JBIG CODING SECTION

SECOND LINE MEMORY

PAGE MEMORY

BITMAP DATA BT[31:0]

BITMAP DATA BT[31:0] 32bit

FREQUENCY BANDING SECTION

BLOCK ROTATION EDITING PROCESSING SECTION

BLOCK DATA GENERATING SECTION

ROTATION INFORMATION HEADER ADDING SECTION

ROTATION INFORMATION HEADER DETECTING SECTION

IMAGE DATA OUTPUT

SECOND LINE MEMORY

THIRD LINE MEMORY

FOURTH LINE MEMORY

101

102

103

104

105

106

107

108

109

110

111

112

113

114

115

116

201

202

203

301

302

FUNCTION
SELECT SIGNAL
(COPY/FAX)

TO IMAGE DATA MEMORY

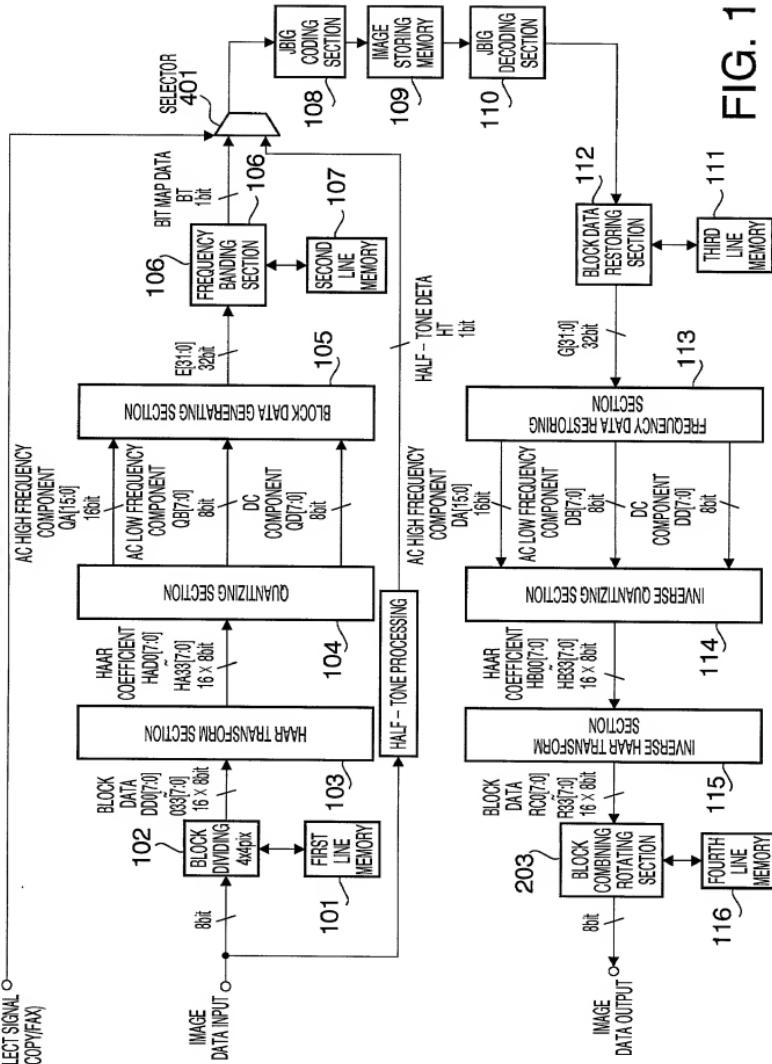


FIG. 15

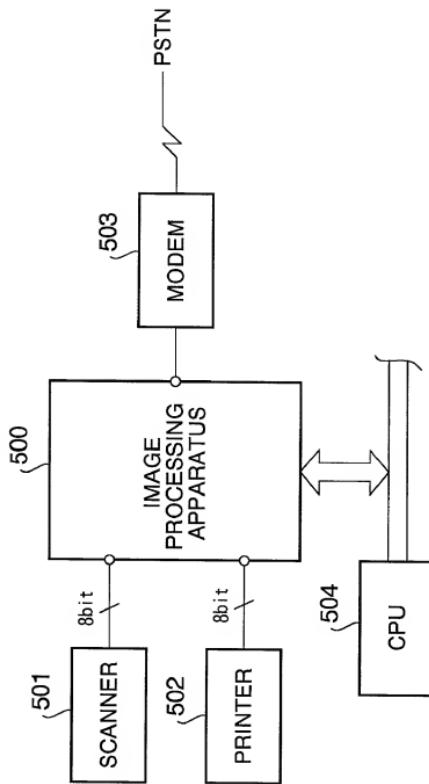


FIG. 16